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An evaluative study of the University of Cincinnati stadium site shows its potential with relation to the existing campus. Conclusions and recommendations concerning its future utilization are presented, based upon consideration of the following--(1) basic university planning policies, (2) assets and liabilities of the site, (3) the decision to demolish the stadium, (4) the need to recognize the stadium's past influence on campus growth, (5) the need to build as densely as possible while maintaining a viable campus environment, and (6) the academic facilities as outlined in the program. (FS)

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STADIUM SITE UTILIZATION STUDY
UNIVERSITY OF CINCINNATI

made possible by a grant from
EDUCATIONAL FACILITIES LABORATORIES, INC.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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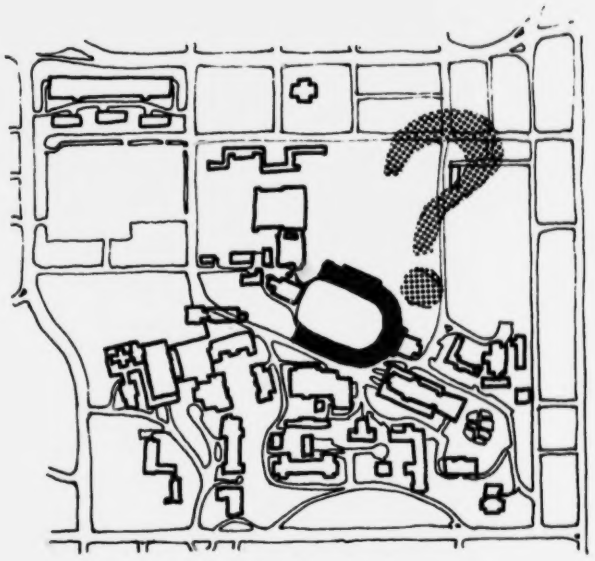
Background

For the past few years, the University of Cincinnati has predicated its master plan on the existing football stadium located directly in the center of the campus. However, in a few years, the City of Cincinnati will build a new municipal stadium that will be available to the University. Consequently, the University will no longer need their stadium for its intended use. The Educational Facilities Laboratories, Inc. awarded a grant to the University to help finance an investigation into a stadium site-feasibility study that will provide answers to two questions:

1. What is the best use of the site for improvement and growth of the campus?
2. Is it possible to convert the stadium in part or in whole for other purposes, or should it be demolished to allow room for new construction?



Basic Planning Policies

Several basic planning policies have guided growth during recent years:

1. ZONING. For disciplined growth, the University has established three land-use zones:

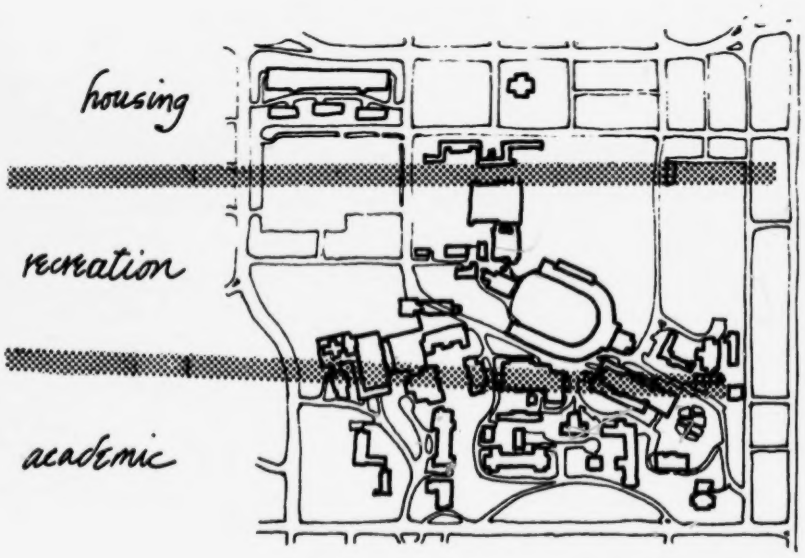
a. Academic
b. Physical Education and Recreation
c. Housing

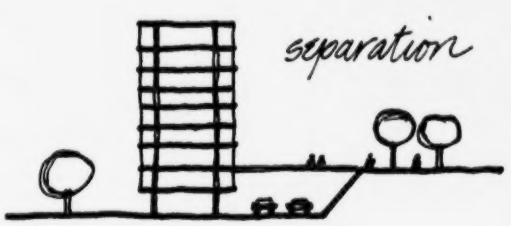
2. HIGH-RISE STRUCTURES. To economize on existing property, high-rise structures will be built when they are functionally possible.

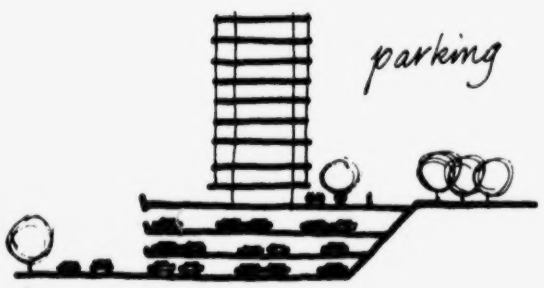
3. SEPARATION OF CIRCULATION. By taking advantage of the natural topography of the campus, separation of pedestrian and automobile circulation will be created by locating parking and service roads on a lower level and pedestrians above.

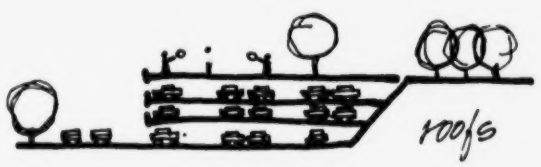
4. PARKING. With the rising cost of land, structured parking has become comparatively economical. Where possible, it will be incorporated into new academic and residential building programs as part of each building.

5. ROOFS. When feasible, the roofs of buildings will be designed to function for campus activities such as pedestrian circulation, recreation and physical education, or outdoor teaching.





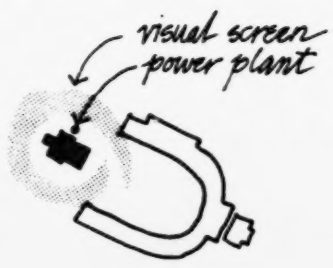




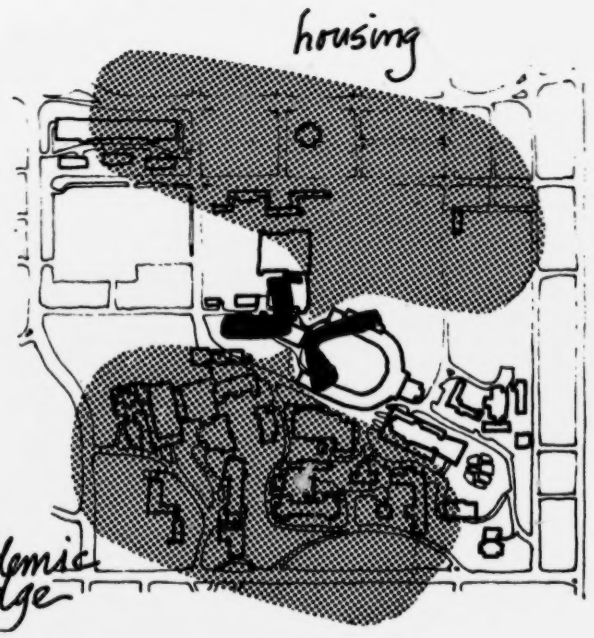
Basic Assets and Liabilities of the Site

The study of the campus with direct relation to the stadium and its surrounding area revealed several pertinent facts:

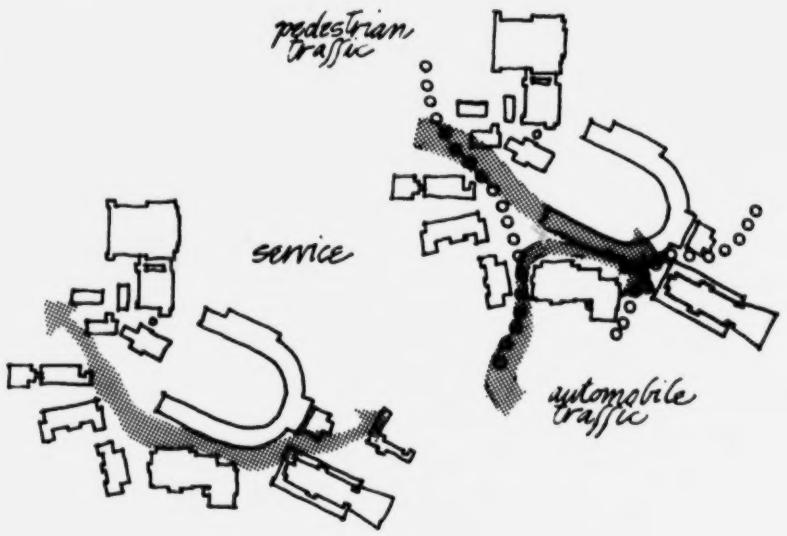
1. VIEWS. From the adjacent buildings, there are beautiful views toward playfields to the east. However, as the panorama swings to the north, there is a less desirable view of the Central Power Plant.



2. PEDESTRIAN CIRCULATION. The stadium is centrally located between the academic ridge and the student housing area. It is a barrier to the major pedestrian movement from one side of the campus to the other. At present, students are forced either to walk around the periphery of the stadium or walk down a hill, traverse the ravine behind the Central Power Plant and walk up another steep hill. This route is not only difficult, but requires passing through the service traffic at the Central Power Plant. Level access across the open end of the stadium needs to be developed. To solve this problem, the University has previously studied constructing a bridge at that location.



3. VEHICULAR CIRCULATION. Vehicles from the north arrive at the campus and move southward along the road between the University Center and the stadium. From the west, cars wind along Campus Drive seeking on-street parking before going to the parking garage at the Conservatory or to Parking Lot No. 1. located at the northeast area of the campus. This pattern of vehicular movement conflicts with pedestrian circulation.

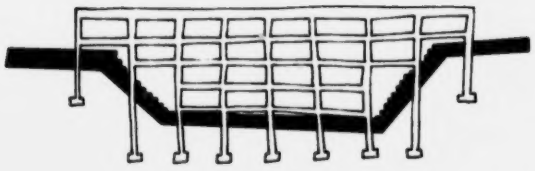


4. SERVICE. The existing road between the Student Center and the stadium must be retained for servicing existing buildings. Otherwise, it will require locating new service roads at great expense. Major pedestrian movement crosses this road. The separation of vehicular from pedestrian circulation is a necessity for the safety of pedestrians and the efficient flow of vehicles.

Existing Structure

The entire stadium is constructed of reinforced concrete. The first nineteen rows of seating are a slab-on-grade. The balance of the structure is concrete beams and columns. The exterior surface of the exposed concrete is badly weathered, while the concrete under surface has decomposed. Steel reinforcing is exposed in many places, causing serious rusting. The stadium, which is built in a natural drainage ravine, has a constant high humidity condition which contributes toward concrete decomposition and steel reinforcing rusting. This condition accounts for approximately $20,000 of the annual $30,000 maintenance expenditure on the stadium.

A structural analysis revealed that no additional loads can be placed on the existing structure. Any structure for covering, enclosing, or dividing the stadium should be separate and independent of the stadium structure.



A demolition estimate was acquired from a contractor who has done similar work for the University. The estimate was broken down into two parts: $35,000 for demolition and $90,000 for removal of rubble (total $125,000).

If the stadium is demolished, the spaces for the University Band and Intercollegiate Athletics will have to be relocated. These spaces are presently inadequate for the above functions. The most serious immediate problem is the leaking roof which is actually the concrete seating area above. The structure has no waterproofing, and during inclement weather, water seeps through cracks in the concrete. While waterproofing is possible, it is excessively expensive in an existing structure of this nature.

Alternatives

Three basic alternatives emerged from discussions and investigation:

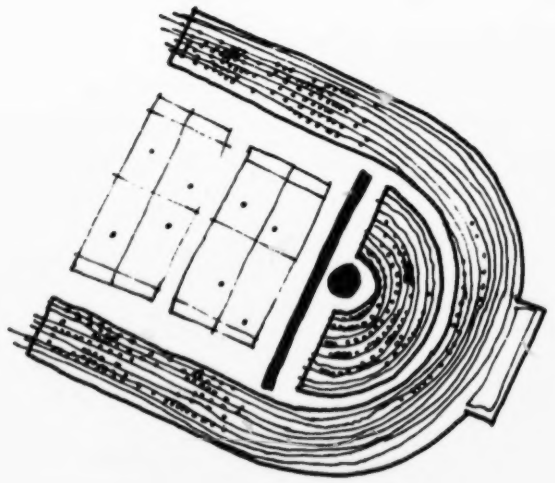
1. CONVERT THE STADIUM TO A NEEDED UNIVERSITY FUNCTION. Several variations of this alternative were analyzed:

a. Build a structure across the top of the existing stadium, enclosing a large spectator area for athletic events such as swimming, tennis, basketball, and other sports activities.

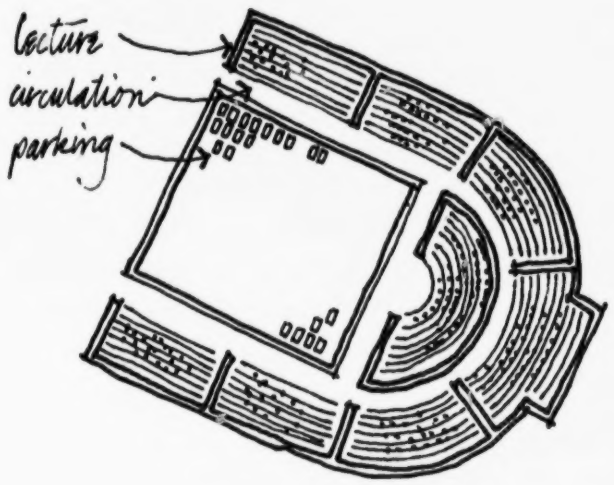
The cost of such a structure would be approximately $12 per square foot which is two to three times higher than a normal structure with relatively long span for athletic purposes. This would also commit an enormous site to enclosing a function which could adequately be housed in smaller and more effectively located areas of the campus.

b. Utilize the football field for a multi-level parking structure, and convert the stadium seating to large-group instruction classrooms.

This seems a good possibility, but there are drawbacks: To remodel the stadium for classroom use would require filling the existing structure with partitions, chairs, and special equipment which would exceed intended loads. It would also create more lecture spaces than the University can effectively utilize now or in the near future, plus require extensive repair to and waterproofing of the decomposed structure.



2. DEMOLISH A PORTION OF THE STADIUM, AND UTILIZE THE REMAINDER. Many combinations are possible. The horseshoe end of the structure could be used as a center for convocations, outdoor theatre and graduations, while academic and parking facilities could be built where the stadium has been removed. Although this could



be readily accomplished, the costs of renovating the remainder of the stadium to alleviate maintenance expenditures and to meet safety requirements would equal, or exceed, the cost of a new facility of the same nature. Furthermore, the University Building Program includes none of the aforementioned alternatives, with the exception of academic and parking needs.

3. DEMOLISH THE TOTAL STADIUM, AND UTILIZE THE SITE. In order to establish the proper and best use of the site, consideration must be given to land value. The stadium and field cover approximately six acres. Current costs for newly-acquired University land are running approximately $260,000 per acre. If the University were to acquire six additional acres, the cost would be close to $1,560,000. Therefore, the stadium site carries at least that same value to the University.

Demolition and removal of the stadium have been estimated at $125,000, which is less than 10% of the total land value. With an established land value of $1,560,000, it is possible to determine a reasonable economic use of the site. Consider the following comparisons of different approaches to development:

a. Construction of a 100,000 s.f. building

$$\text{Land Value} \div \text{Total Bldg. Size} \qquad \frac{\$1{,}560{,}000}{100{,}000} = \$15.60/\text{s.f.}$$

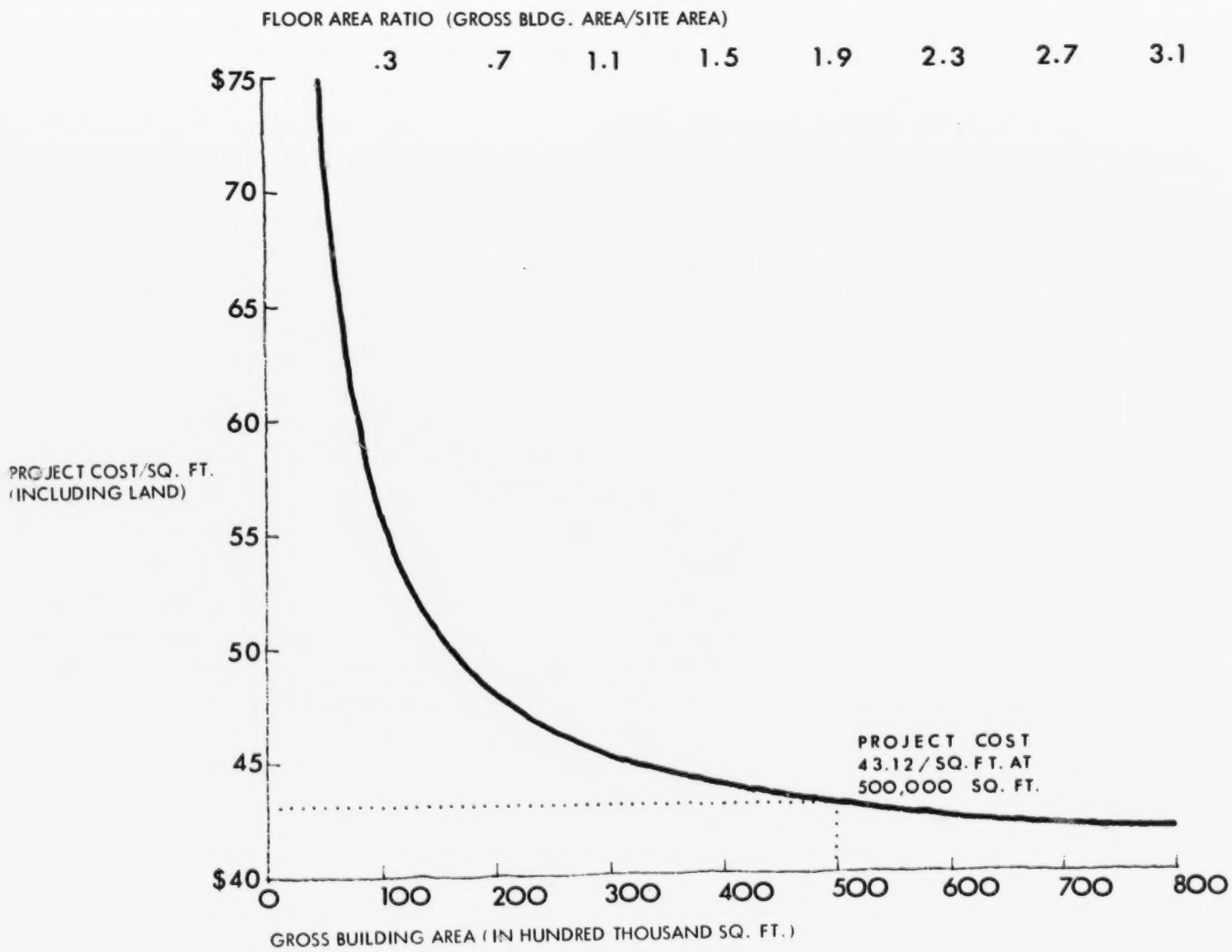
The cost of land is *$15.60* per square foot of building area.

Combine

$$\begin{array}{r} \$15.60/\text{s.f.} \\ +\ 40.00/\text{s.f.}^{*} \\ \hline 55.60/\text{s.f.} \end{array}$$

The total project cost, including building and land, is *$55.60* per square foot.

*current est. bldg. cost at University


FLOOR AREA RATIO (GROSS BLDG. AREA/SITE AREA)
.3
.7
1.1
1.5
1.9
2.3
2.7
3.1
$75
70
65
60
55
50
45
$40
PROJECT COST/SQ. FT. (INCLUDING LAND)
PROJECT COST
43.12/SQ. FT. AT
500,000 SQ. FT.
0
100
200
300
400
500
600
700
800
GROSS BUILDING AREA (IN HUNDRED THOUSAND SQ. FT.)

b. Construction of a 500,000 s.f. building

$$\frac{\text{Land Value}}{\text{Total Bldg. Size}} \quad \frac{\$1{,}560{,}000}{500{,}000} = \$3.10/\text{s.f.}$$

The cost of land is *$3.10* per square foot of building area.

Combine:

$$\begin{array}{rl} & \$\ 3.10/\text{s.f.} \\ + & \underline{40.00/\text{s.f.}^*} \\ & \$43.10/\text{s.f. Total Project Cost} \end{array}$$

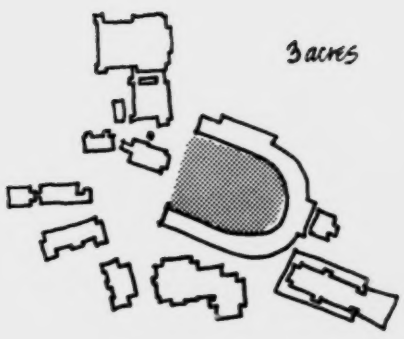
*current est. bldg. cost at University

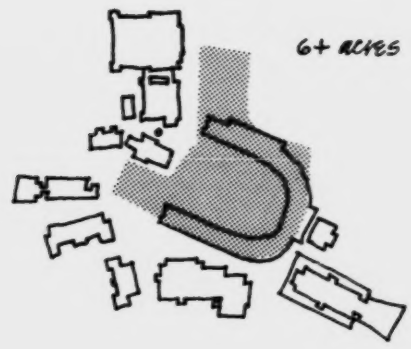
These figures are plotted on the accompanying graph. It shows that economy can be realized by building densely. It is important to note that the economies level off beyond the 500,000 s.f. point, and the Total Project Cost will never drop below $40.00/s.f. for building construction.

Conclusions and Recommendations

1. If the stadium remains, it will continue to be a maintenance problem. It will cost a premium to build over or on top of it, and it will impose severe limitations on total site development.

2. The stadium occupies a prime location on campus, and the site should be utilized for many needed University functions which include parking, academic, and recreation/physical education



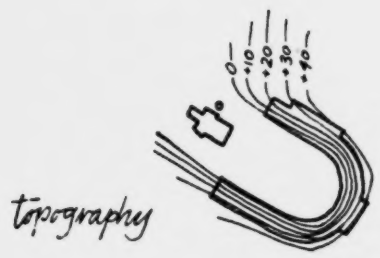


fields. Only one half of the site could be used as an athletic field because of the topography. However, if a 500,000 s.f. academic building is constructed on the site, there will be a two-to-one floor area ratio (the ratio of building area to site area). Building at this density is economical, practical, and can provide a viable campus environment.

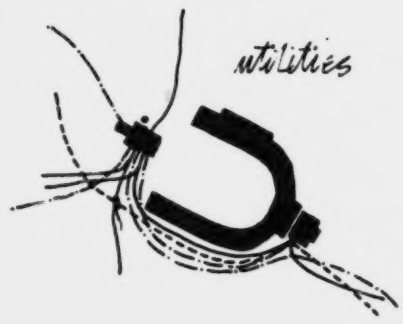
A 500,000 s.f. building at a cost of $40.00 s.f. for academic space is $20,000,000. Additional cost for an 800-car garage at $2,000 per car is $1,600,000 for a total building cost of $21,600,000. The $125,000 for demolition is less than 1% of the total project. Demolition is a minor economic consideration.

3. If the stadium structure is demolished, many constraining factors will remain:

a. *Topography.* With the removal of the stadium, a bowl shape with a depth of 40 feet will remain.



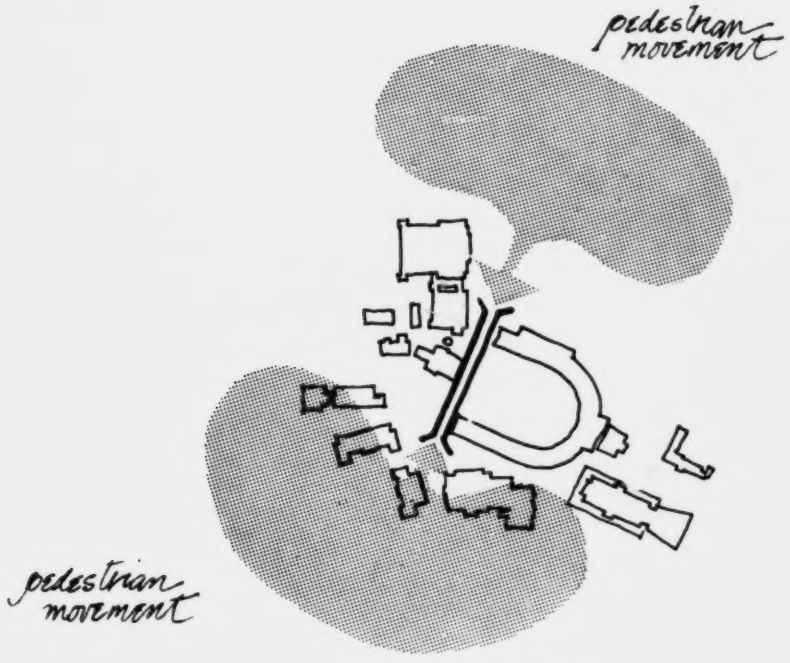
b. *Utilities.* Major services, including steam and chilled piping, electricity and water, conform to the shape of the stadium and run in an adjacent tunnel. Relocation of these services would be expensive.



c. *Roads.* Adjacent buildings depend on the existing road at the periphery of the stadium for servicing. It would be costly to relocate.

d. *Adjacent Buildings.* Locations of adjacent buildings were predicated on the stadium with respect to pedestrian entry, service, vehicular drop-off, and views.

The stadium has had a great influence on the campus. Its impression has taken many forms, and its influence will remain long after the concrete has been demolished. Each of the preceding conclusions is a result of the stadium's existence and is far more important than the economic liability of the concrete shell itself.



Further considerations are also important:

a. *Climate.* Temperature, sleet, snow, rain, and wind play an important role in influencing the design of buildings. Because of the extended periods of sleet, rain, and snow each year, consideration must be given in the design to sheltered exterior movement between buildings.
b. *Circulation.* Cross-campus circulation is imperative for the pedestrian as well as separation from vehicular patterns of circulation.
c. *Parking.* A new parking structure would alleviate this problem on campus and further relieve the circulation problems between pedestrians and vehicles.
d. *Visual Screen.* It is necessary to create a visual screen around the Central Power Plant for the embellishment of views from the stadium site and adjacent buildings.

Site Utilization Approach

Since all previous campus planning has been based on the stadium remaining, the approach for a feasible site use required a review of that planning. This study is not a comprehensive master plan, but an evaluation to show the potential of the stadium site with relation to the existing campus.

Program

After a review of the projected campus plan based on a total future potential enrollment of 25,000 students by the 1972-73 school year (10,000 more than the present enrollment), it was determined that three major academic disciplines could fit into the stadium site:

1. LIBRARY EXPANSION. The existing Library expansion has a limited site which will be too confined for needed growth. Library expansion,

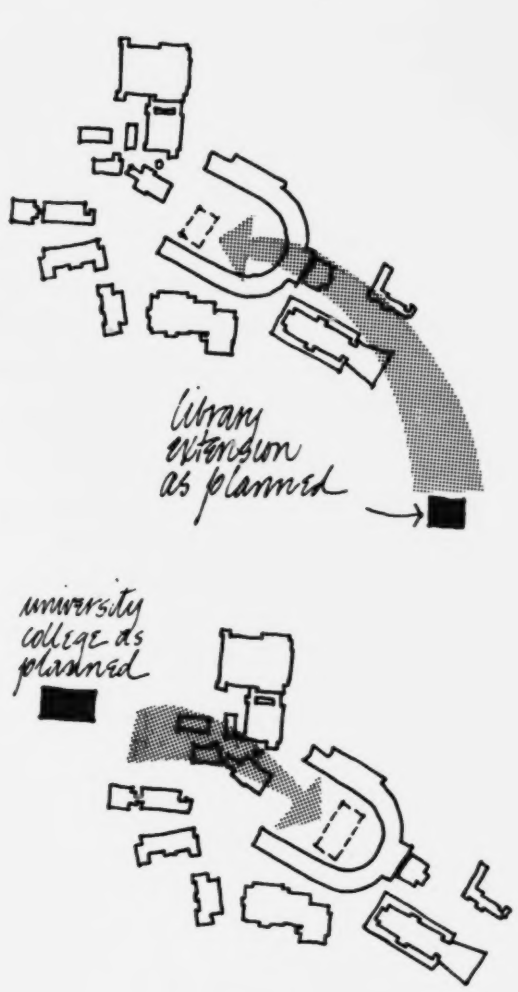
which has been programmed for 86,000 square feet, could be relocated to the stadium site. This has many advantages:

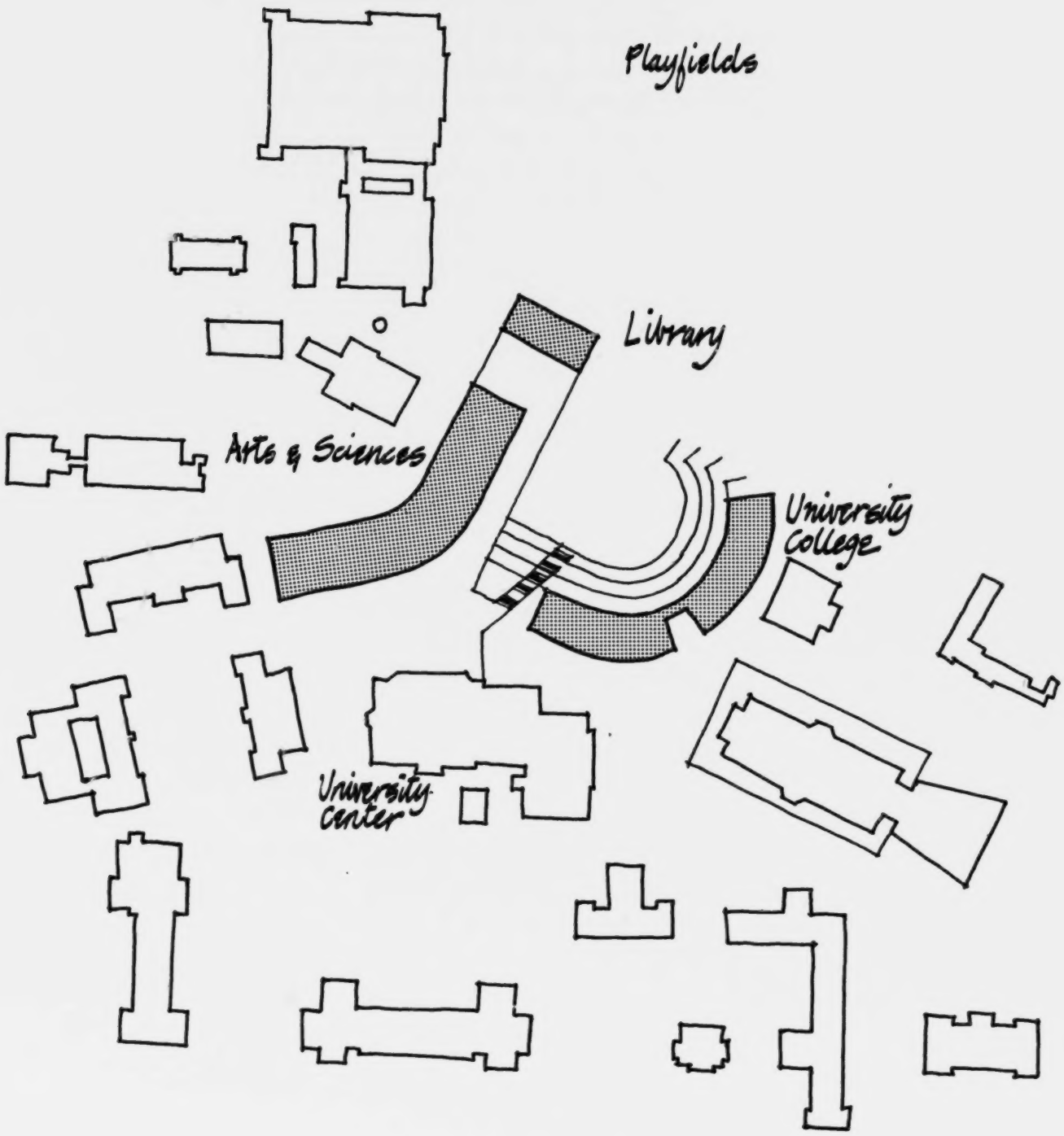
a. It would prevent the destruction of the pleasant environment and amphitheater located behind the Library where expansion is presently planned.
b. The new location would be centrally located between the academic ridge and the student housing.
c. It would be in the major circulation paths of students coming to campus or going from the academic ridge to campus housing.
d. It would also be convenient for day students and faculty who center around the academic ridge.
e. With a parking structure on the site, the Library becomes conveniently located for students returning to the campus for evening study.

2. UNIVERSITY COLLEGE. Because of the limited land on campus, the University College of 104,000 square feet had been planned for a location just to the east of the Services Building. This intended location had some disadvantages which will be avoided by relocating the University College in the new stadium site development:

a. It will now be situated within an academic development instead of the Services and Physical Education Buildings which would have been a form of isolation from other academic disciplines on campus.
b. It will avoid the problem of noise from service vehicles coming to the Central Power Plant and Services Building.

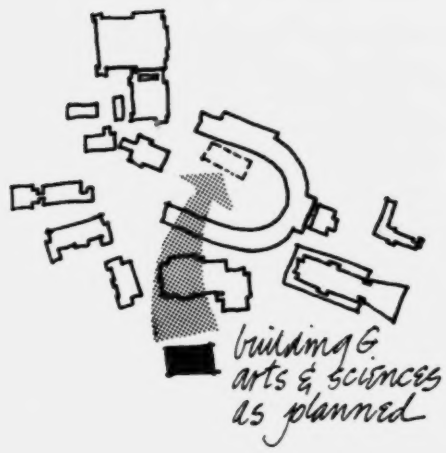
3. ARTS AND SCIENCES. The existing space for Arts and Sciences located in McMicken Hall, is far less than the needed 242,000 square feet of




Playfields
Library
Arts & Sciences
University College
University center

offices and classrooms. The projected campus plan calls for demolition of three old buildings behind McMicken Hall and expanding Arts and Sciences to this location. Several pertinent points should be mentioned concerning this plan:

a. Better organization, communication, and inter-action between students and faculty can be realized if Arts and Sciences has one homogeneous building rather than an annex as presently planned.
b. A more contiguous space would result if the three buildings were demolished and their site developed as open space. An open green mall from one end of the academic ridge to the other could be created, giving strength and unity to the academic ridge.



Six major considerations have been established which will have significant influence on the planning of a new facility for this site:

1. BASIC UNIVERSITY PLANNING POLICIES.
2. ASSETS AND LIABILITIES OF THE SITE.
3. THE DECISION TO DEMOLISH THE STADIUM.
4. THE NEED TO RECOGNIZE THE STADIUM'S PAST INFLUENCE ON CAMPUS GROWTH.
5. THE NEED TO BUILD AS DENSELY AS POSSIBLE WHILE MAINTAINING A VIABLE CAMPUS ENVIRONMENT.
6. THE ACADEMIC FACILITIES AS OUTLINED IN THE PROGRAM.

Other considerations are as follows:

1. PARKING. An element not discussed in the program, but one which appears subtly as a contribution to the whole planning development, was parking.

a. The inclusion of parking provides a convenient location for faculty, staff, and students.

the bridge

b. It will make possible the elimination of on-street parking along the campus drive that penetrates the academic ridge. With removal of parking, the street can be converted to a pedestrian way and students will be able to walk across the academic ridge without coming into contact with the automobile.

c. A parking garage will help alleviate the need for the parking lot on the northern portion of the campus. With the completion of other planned parking garages, this parking area should become available for conversion to much-needed Physical Education playfields.

d. Besides parking, the garage will serve other purposes. The roof becomes a bridge that spans the bowl of the stadium, a natural ravine. This pulls the campus together by providing convenient access across the campus from the academic ridge to the campus housing.

e. It will act as the base and plaza for the academic buildings above.

f. The garage structure, which has 60-feet spans at 20 feet on center, will project through the plaza and become the column structure of the academic buildings.

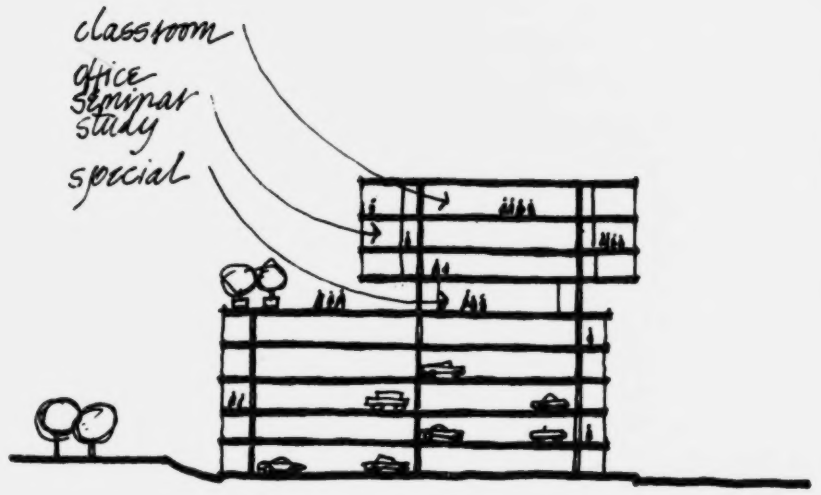
g. With a capacity of 800 cars, the garage consists of five parking levels extending from one side of the stadium bowl to the other. The levels align with the floor elevations of the curved University College Building, enabling people to park on the desired level and walk directly out of the garage at any floor, or take the elevator to the plaza level and academic spaces above.

h. By establishing the plaza level at the same elevation as the University Center's main floor, it will be possible to have vehicles pass beneath and pedestrians above, eliminating the conflict between people and cars at this point.

2. ARTS AND SCIENCES. The Arts and Sciences Building, having an area of 180,000 square feet, consists of a structure of 60-foot spans at 20 feet on center, with varying cantilevers on each side:

a. The building is zoned by function both horizontally and vertically. The first floor will be utilized for special activities and high concentration of people such as large group lecture rooms and auditoriums. The next three floors will serve as typical education spaces such as classrooms and seminar rooms, faculty offices and student-study space.

b. The 60-foot span creates a loft space allowing total flexibility of wall locations and classroom arrangements and sizes. With this type structure, it will be possible to rearrange the spaces easily to respond to any changes in educational philosophies.

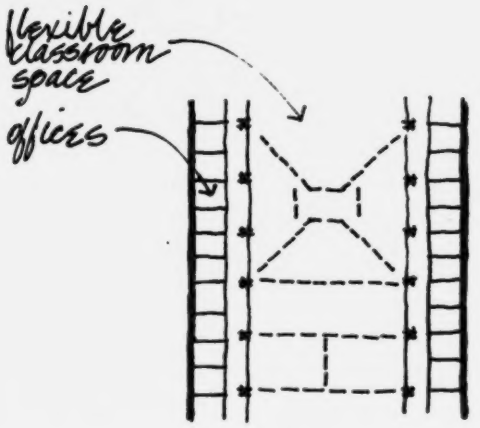


Garage & Arts & Science

3. LIBRARY. The Library is similar in structure to that of the Arts and Sciences Building and is an extension of the parking garage structure. Total area of the 13-story building is 134,000 square feet with approximately 10,000 square feet per floor.

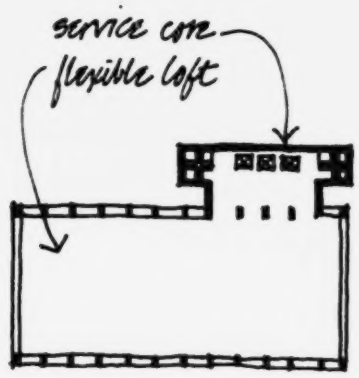
a. This area meets the need for Library expansion plus sufficient space to house an Instructional Materials Center.

b. In this building, as in the Arts and Sciences Building, there is a 60-foot structural clear span. By pulling the core facilities, consisting of stairs, elevators, toilets and storage, out of the Main Building, the Library will have the flexibility of a loft structure allowing easy rearrangement of partitions as required.



Plan · Arts & Science

4. UNIVERSITY COLLEGE. The University College Building reflects the form of the horseshoe shaped stadium in its response to existing condi-



Plan · Library

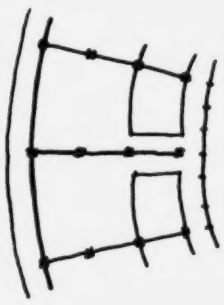
tions. These include topograhy, utility tunnels and buildings, all of which were greatly influenced by the stadium.

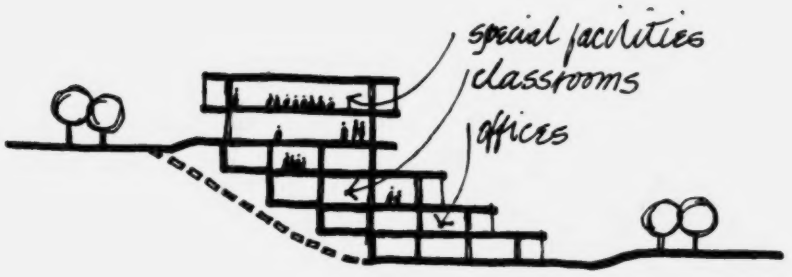
a. The building expression conforms strongly to the topography by following the curved form of the land, and by building against the sloping terrain and allowing the building to step out at each level to reflect the natural grade changes of the earth on which it rests.

b. To further the concept of separating pedestrian and vehicular movement on campus, as outlined in the Campus Planning Policies, a ramp connection is made from the Conservatory of Music Plaza to the top floor of the University College. The pedestrian moves from this level down to the University College Plaza which relates to the road and the lower level entrances of the University Center where a pleasant and convenient auto-drop-off has been created. From this level, the remaining floors of the University College which house educational spaces and offices, step down to the landscaped green space.

c. The green space recalls the nature of the older portion of the campus along the academic ridge where buildings cluster around a landscaped mall. The green space flows informally up a turfed slope and out into playfields on one side. On the other side, a stronger and more dramatic geometric expression of both visual and physical movement has been established to relate the identifying green space of the new complex to the academic ridge.

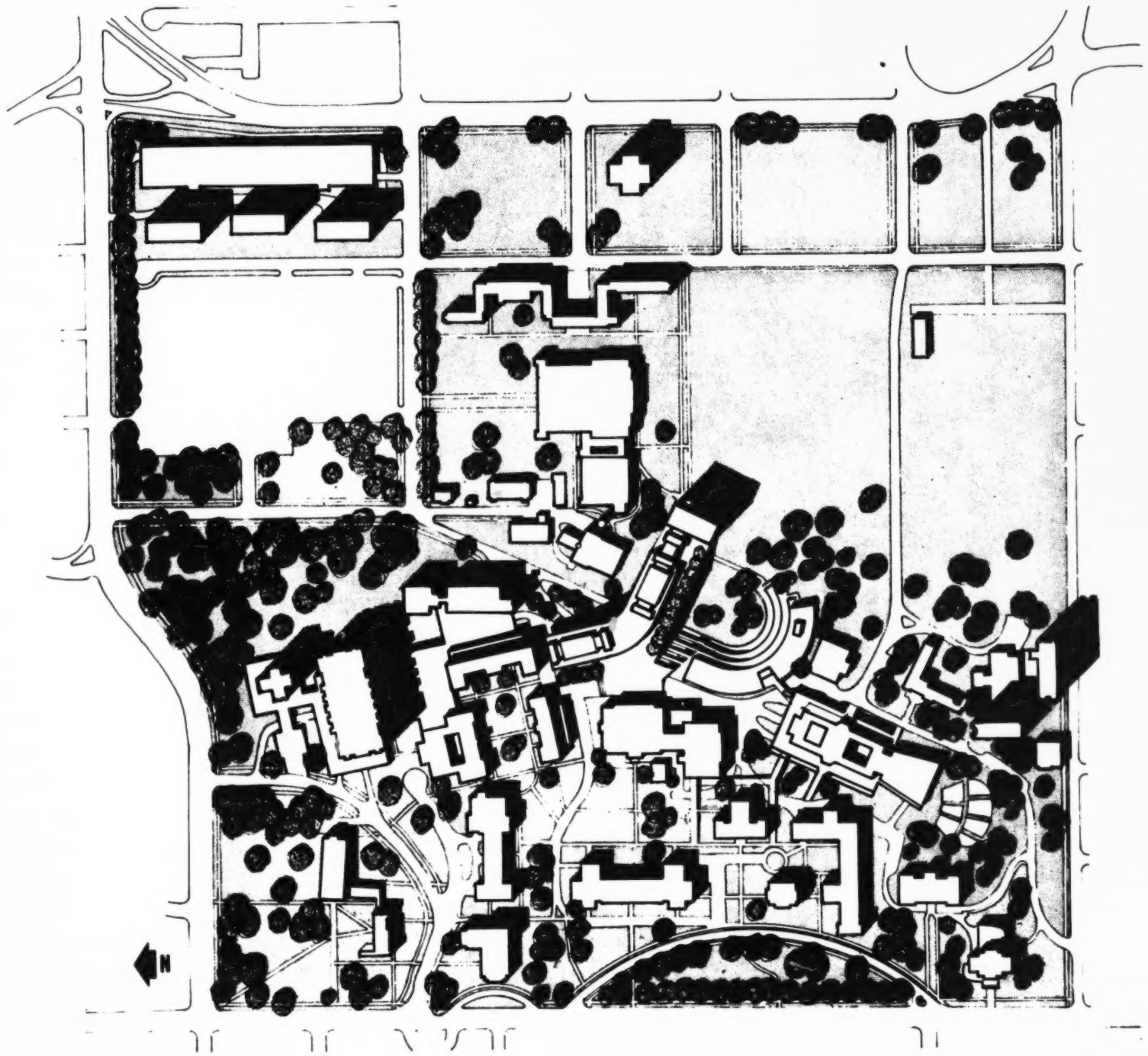
Plan - University College

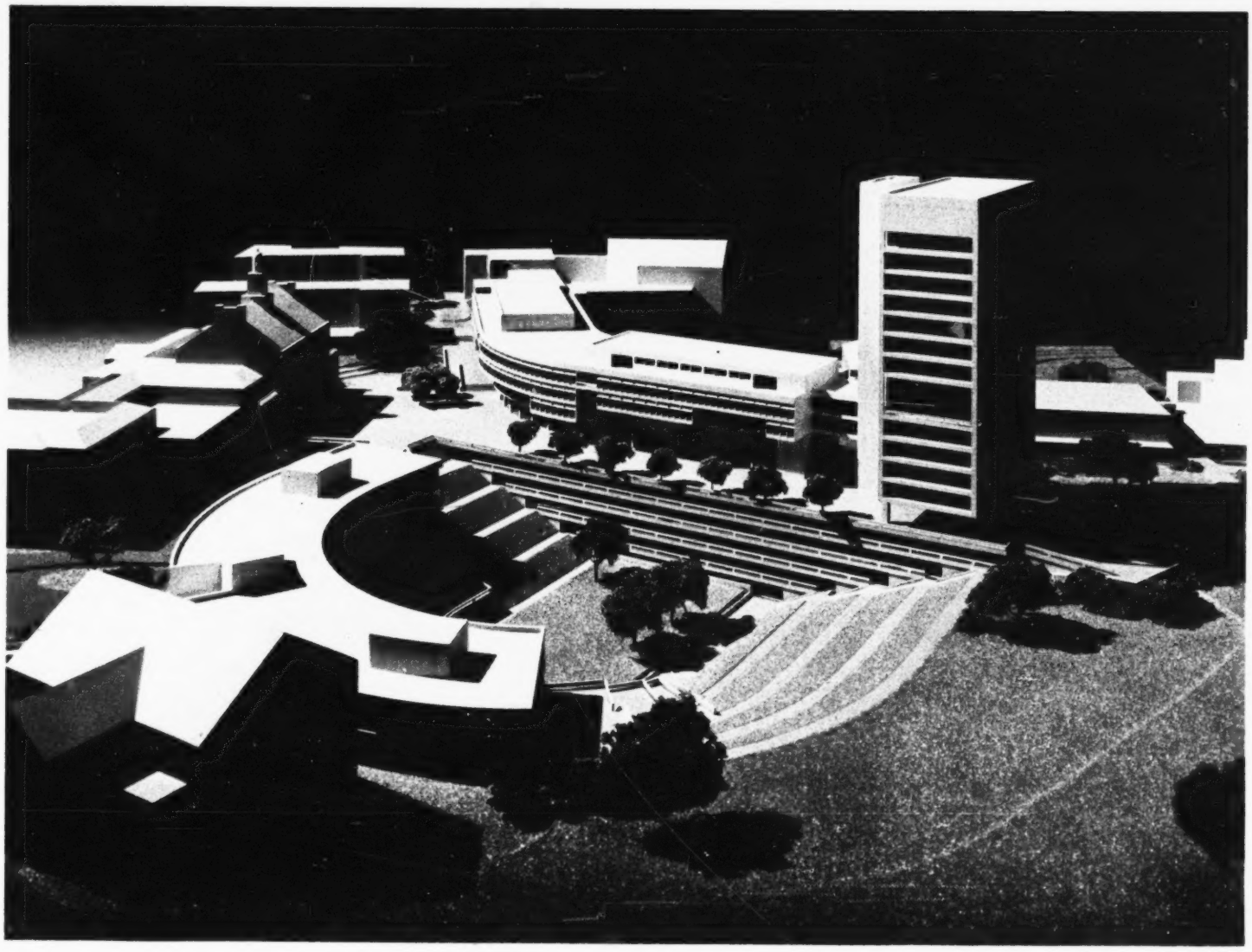


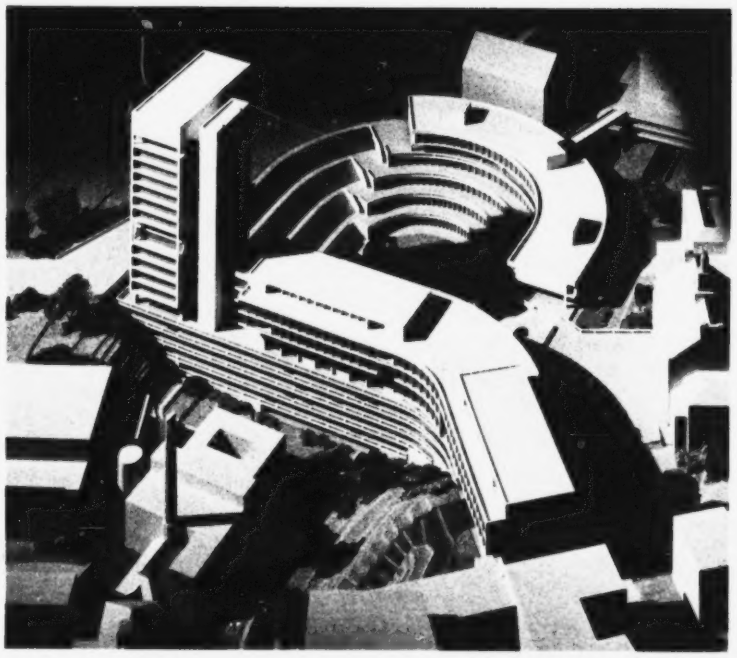


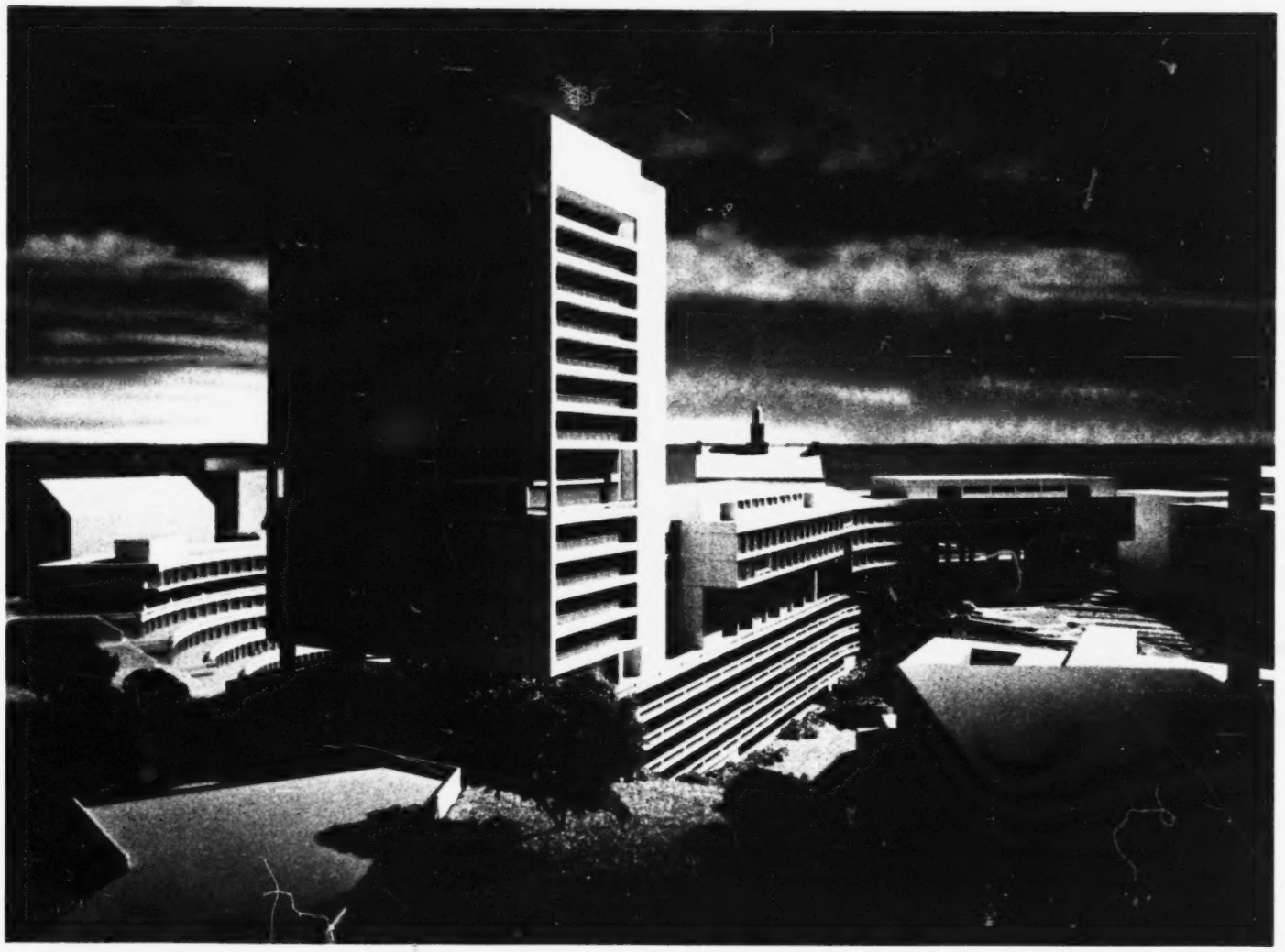
Section · University College

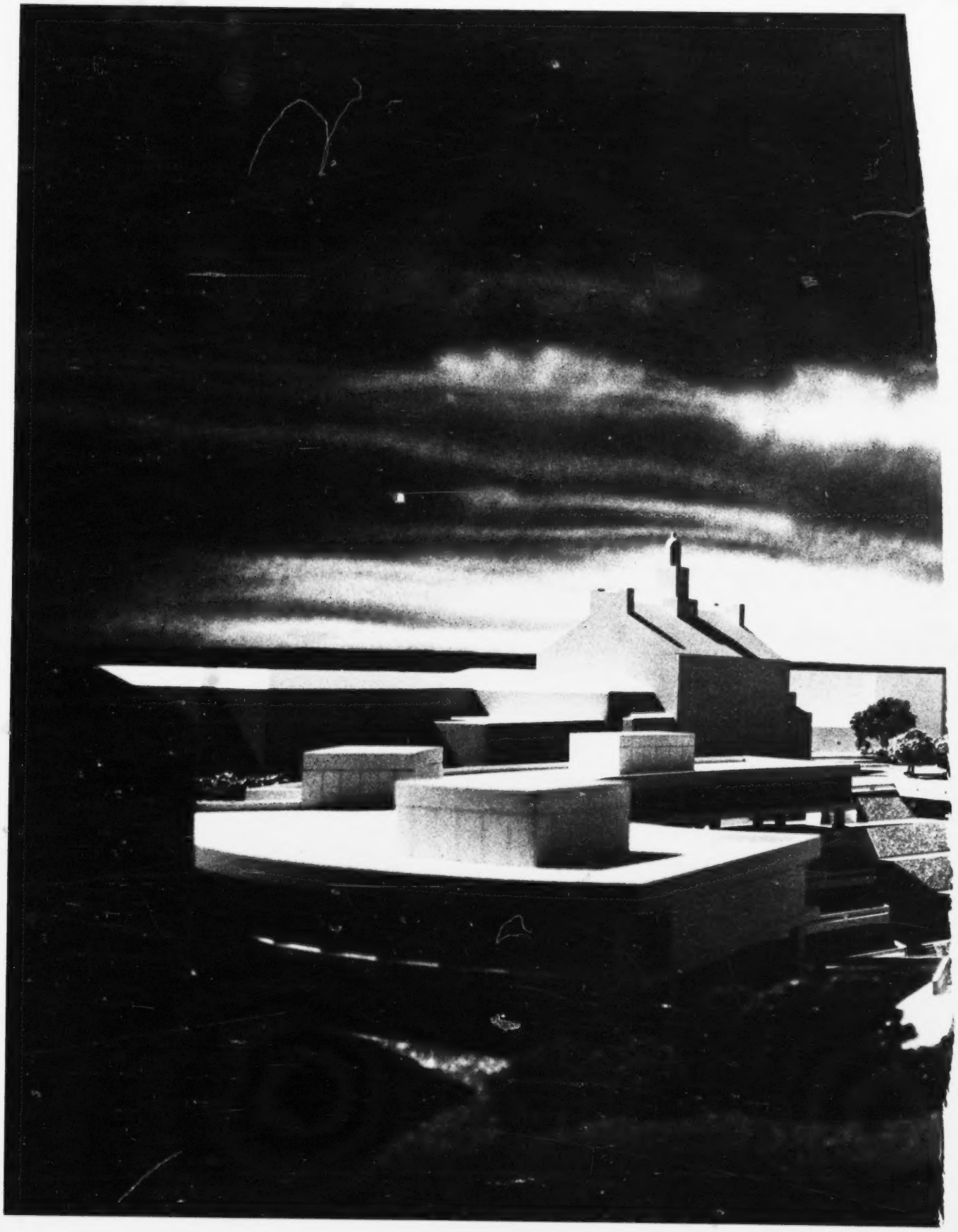
THE NEW STADIUM SITE DEVELOPMENT not only meets the immediate needs of the University, but also its elements come together to form a catalyst that pulls the disciplines of the campus together to create a more homogeneous University complex.

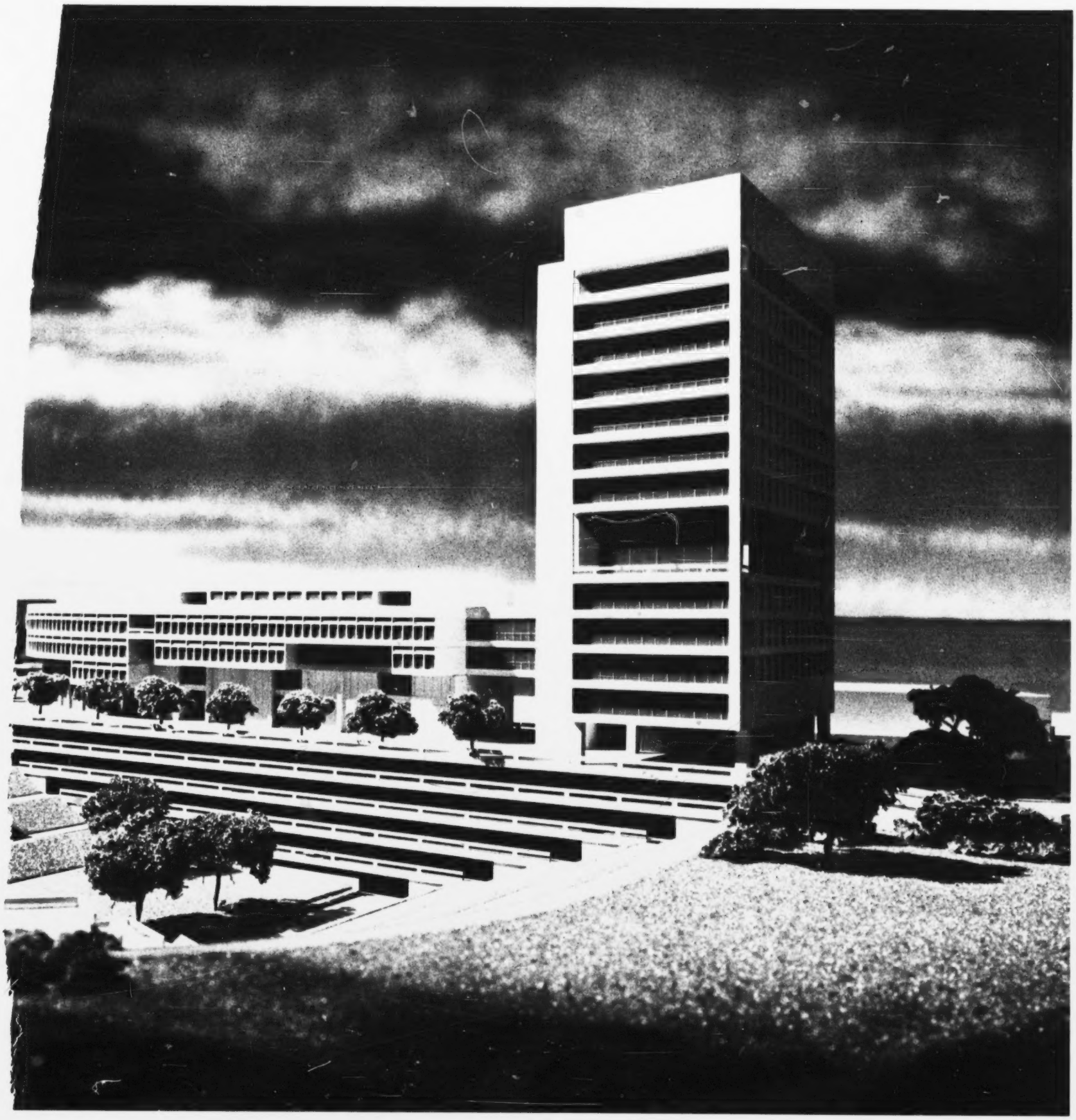


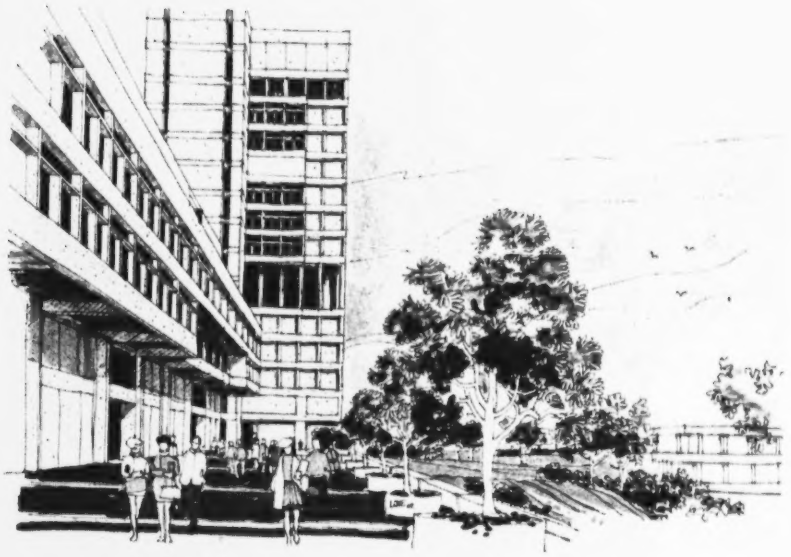


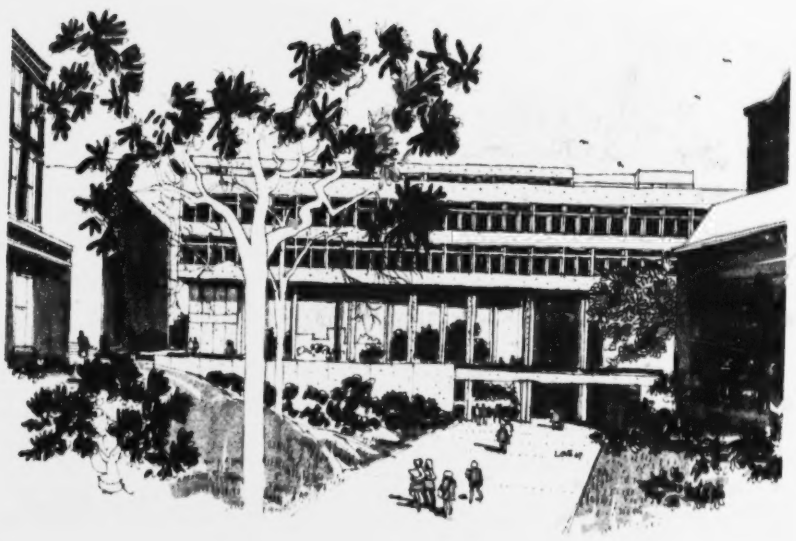












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